MATERIAL SAFETY DATA SHEET

1. SUBSTANCE AND SOURCE IDENTIFICATION

National Institute of Standards and Technology
Standard Reference Materials Program
100 Bureau Drive, Stop 2300
Gaithersburg, Maryland 20899-2300

SRM Number: 695
MSDS Number: 695
SRM Name: Trace Elements in Multi-Nutrient Fertilizer

Date of Issue: 26 June 2006

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Description: Standard Reference Material (SRM) 695 is intended primarily for use in the evaluation of techniques employed in the analysis of multi-nutrient fertilizer materials and materials of a similar matrix. A unit of SRM 695 consists of approximately 70 g of jet milled fertilizer.

Substance: Multi-Nutrient Fertilizer

Other Designations: **Multi-Nutrient Fertilizer** (fertilizer test blend)

2. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS[1]

Component	CAS Number	EC Number (EINECS)	Nominal Concentration (% by weight)
Diammonium Hydrogen Phosphate	7783-28-0	231-987-8	35
Potassium Magnesium Sulfate (Sulfate of Potash Magnesia)	14977-37-8	not assigned	14
Potassium Nitrate	7757-79-1	231-818-8	11
Potassium Chloride	7447-40-7	231-211-8	10
Urea	57-13-6	200-315-5	10
Iron (in the form of various Iron compounds of unknown percentages)	not applicable	not applicable	6
Limestone (Calcium Carbonate)	1317-65-3	215-279-6	5
Urea Formaldehyde	9011-05-6	not assigned	5
Silicon Dioxide (Quartz)	14808-60-7	238-878-7	2.6

[1.] Hazardous components 1 % or greater; Carcinogens 0.1 % or greater are listed in compliance with OSHA 29 CFR 1910.1200.

3. HAZARDS IDENTIFICATION

NFPA Ratings (Scale 0–4): Health = 1 Fire = 0 Reactivity = 0

Potential Health Effects

Eye Contact: Contact may be irritating and abrasive to the eye due to mechanical action.

Skin Contact: Exposure to intact skin may be irritating and abrasive due to mechanical action.

Inhalation: Overexposure to dust may cause irritation of the nose and throat and may include symptoms such as coughing, shortness of breath, and lung disease.

Ingestion: Ingestion of large amounts may cause gastrointestinal upset.

Target Organs: No data available on fertilizer mixture.

Medical Conditions Aggravated by Exposure:	Respiratory (asthma-like) disorders. Skin disorders.
Physical Hazards:	None expected.
Additional Information on Fire and Explosion Hazards:	Refer to Section 5, "Fire Fighting Measures" and Section 10, "Stability and Reactivity".
Listed as a Carcinogen/ Potential Carcinogen:	No information available for this product (fertilizer mixture) on carcinogenicity and mutagenicity.

4. First Aid Measures

Skin Contact:	Remove contaminated clothing and shoes. Wash skin with soap and water for at least 15 minutes. Obtain medical assistance, if needed. Clean contaminated clothing before reuse.
Eye Contact:	Move victim away from exposure and into fresh air. Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Obtain medical assistance, if needed.
Inhalation:	If adverse effects occur, move victim away from exposure and into fresh air. Give artificial respiration if not breathing by qualified personnel. If breathing is difficult, administer oxygen by qualified personnel. Get immediate medical attention.
Ingestion:	If symptoms occur, obtain immediate medical assistance. When vomiting occurs, keep head lower than hips to help prevent aspiration. Never make an unconscious person vomit or drink fluids. If person is unconscious, turn head to side.

5. Fire Fighting Measures

Fire and Explosion Hazards:	This material is non-flammable.
Extinguishing Media:	Use extinguishing media that is compatible for the surrounding material. Avoid excessive water to minimize runoff.
Fire Fighting:	Keep unnecessary people away, isolate hazard area, and deny entry. Wear full protective clothing and NIOSH-approved self-contained breathing apparatus (SCBA). See section 8 for special chemical protective clothing.
Flash Point:	Not applicable.
Method Used:	Not applicable.
Autoignition Temperature:	Not applicable.
Flammability Limits in Air	
Upper (Volume %):	Not applicable.
Lower (Volume %):	Not applicable.

6. Accidental Release Measures

Occupational Release:	Wear appropriate protective clothing. Collect spilled material in an appropriate container for disposal if contaminated. Avoid raising dust.
Disposal:	Refer to section 13, "Disposal Considerations".

7. Handling and Storage

Storage:	Store and handle in accordance with all current regulations and standards. See the Certificate of Analysis for SRM 695 for storage and handling of the product to protect product quality. Keep away from incompatible materials.
Safe Handling Precautions:	See Section 8, "Exposure Controls and Personal Protection".

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits:

Diammonium Hydrogen Phosphate: No occupational exposure limits established.

Potassium Magnesium Sulfate: No occupational exposure limits established.

Potassium Nitrate: No occupational exposure limits established.

Potassium Chloride: No occupational exposure limits established.

Urea: No occupational exposure limits established.

Iron: (Dust and Fume) (as Fe)
OSHA (PEL): 10 mg/m^3 TWA
ACGIH: 5 mg/m^3 TWA
NIOSH: 5 mg/m^3 recommended TWA (10 h) (total particulate)
WEL UK: 5 mg/m^3 TWA
WEL UK: 10 mg/m^3 STEL

Limestone:
OSHA (PEL): 5 mg/m^3 TWA (respirable dust fraction)
OSHA (PEL): 15 mg/m^3 TWA (total dust)
ACGIH: 10 mg/m^3 TWA (total particulate) (no asbestos; < 1 % crystalline silica)
NIOSH: 10 mg/m^3 recommended TWA (10 h) (total particulate)
NIOSH: 5 mg/m^3 recommended TWA (10 h) (respirable fraction)
WEL UK: 10 mg/m^3 TWA (total inhalable dust)
WEL UK: 4 mg/m^3 TWA (respirable dust)

Urea Formaldehyde:
OSHA (PEL): 0.75 ppm TWA
OSHA (PEL): 2 ppm STEL (15 minutes)
ACGIH: 0.3 ppm ceiling (sensitizer)
NIOSH: 0.016 ppm recommended TWA (10 h)
NIOSH: 0.1 ppm recommended ceiling (15 minutes)
WEL UK: 2.5 mg/m^3 (2 ppm) TWA
WEL UK: 2.5 mg/m^3 (2 ppm) STEL

Silicon Dioxide:
OSHA (PEL): 0.3 mg/m^3 TWA (total dust)
OSHA (PEL): 0.1 mg/m^3 TWA (respirable dust)
ACGIH: 0.05 mg/m^3 TWA (respirable fraction)
NIOSH: 0.05 mg/m^3 recommended TWA (10 h) (respirable dust)
WEL UK: 0.3 mg/m^3 TWA (respirable particulate)

Ventilation: Use a local exhaust ventilation system if significant dusting occurs.

Respirator: Respiratory protection required under conditions of frequent use or heavy exposure. A NIOSH approved air purifying respirator may be used under conditions where airborne concentrations are expected to exceed exposure limits. A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed if workplace conditions warrant a respirator.

Eye Protection: Wear approved eye protection. An eye wash station should be readily available near the handling and use areas.

Personal Protection: Wear appropriate protective gloves and clothing to prevent skin exposure.

9. PHYSICAL AND CHEMICAL PROPERTIES

Component:	**Multi-Nutrient Fertilizer**
Appearance and Odor:	Solid. Grey to brown powder. Odorless.
Molecular Weight:	Not applicable.
pH:	5 – 8
Water Solubility:	Soluble.

10. STABILITY AND REACTIVITY

Stability: ____ Stable X Unstable

Stable under normal temperatures and pressure.

Incompatible Materials: Acids.

Other Conditions to Avoid: Extreme heat may cause emissions of toxic fumes.

Fire/Explosion Information: See Section 5, "Fire Fighting Measures".

Hazardous Decomposition Products: Fumes of metal oxides and fluoride may be released.

Hazardous Polymerization: ____ Will Occur X Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Entry: X Inhalation X Skin X Ingestion

Toxicity Data

Potassium Nitrate: Rat, Oral LD_{50}: 3 540 mg/kg
Rat, Oral TD_{LO}: 10 mg/kg

Potassium Chloride: Man, Oral LD_{LO}: 20 mg/kg
Woman, Oral TD_{LO}: 60 mg/kg (1 day)

Urea: Rat, Oral LD_{50}: 8 471 mg/kg

Iron Oxide: Rat, Oral LD_{50}: > 10 g/mg

Limestone: Rat, Inhalation-intermittent TC_{LO}: 84 mg/m^3 (4 h to 40 weeks)
Rat, Oral LD_{50}: 6 450 mg/kg

Urea Formaldehyde: Rat, Oral LD_{50}: 8 394 mg/kg
Rat Inhalation LC_{50}: > 167 mg/m^3 (4 h)

Quartz (Silicon Dioxide): Rat, Inhalation TC_{LO}: 200 mg/kg
Rat, Oral TD_{LO}: 120 g/kg
Rat, Inhalation-intermittent TC_{LO}: 58 mg/m^3 (13 weeks)

Health Hazards (Acute and Chronic): See Section 4, "Hazards Identification," for potential health effects.

12. ECOLOGICAL INFORMATION

Adverse Effects: No ecotoxicity data available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose in accordance with all applicable federal, state, and local regulations. This material, is not an RCRA "listed" or "characteristic" hazardous waste.

14. TRANSPORTATION INFORMATION

U.S. DOT & IATA: Not regulated by DOT and IATA.

15. REGULATORY INFORMATION

U.S. Regulations: CERCLA Sections 102a/103 Hazardous Substances: Not regulated.

SARA Title III Sections 302, 304: Not regulated.

SARA Title III Section 313 (40 CFR 372.65): Not regulated.

SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21):

ACUTE:	Yes (dust).
CHRONIC:	Yes (dust).
FIRE:	No.
REACTIVE:	No.
SUDDEN RELEASE:	No.

CANADIAN Regulations:

DSL:	Yes.
NDSL:	No

National Inventory Status

U.S. Inventory (TSCA): Diammonium Hydrogen Phosphate: Listed in inventory.
Potassium Magnesium Sulfate: NOT listed in inventory.
Potassium Nitrate: Listed in inventory.
Potassium Chloride: Listed in inventory.
Urea: Listed in inventory.
Limestone: Listed in inventory.
Urea Formaldehyde: Listed in inventory.
Silicon Dioxide: Listed in inventory.

16. OTHER INFORMATION

Sources:

MDL Information Systems, Inc., MSDS *Ammonium Phosphate, Dibasic* (Diammonium Hydrogen Phosphate), 19 March 2003.
MDL Information Systems, Inc., MSDS *Potassium Nitrate*, 18 September 2003.
MDL Information Systems, Inc., MSDS *Potassium Chloride*, 17 March 2005.
MDL Information Systems, Inc., MSDS *Urea*, 16 June 2005.
MDL Information Systems, Inc., MSDS *Iron Oxide*, 16 March 2006.
MDL Information Systems, Inc., MSDS *Limestone*, 16 June 2005.
MDL Information Systems, Inc., MSDS *Urea-Formaldehyde*, 08 December 2005.
MDL Information Systems, Inc., MSDS *Quartz*, 16 June 2005.
Mosaic, MSDS *K-Mag®, all grades* (for Potassium Magnesium Sulfate Information), 26 September 2000.
Mosaic, MSDS *Test Blend Fertilizer Materials*, 21 January 2003.